Orangeline High Speed Maglev

ORANGELINE HIGH SPEED MAGLEV PROJECT MILESTONES

December 2001

STUDY CONCLUDES PRIVATELY-FUNDED MAGLEV IS FEASIBLE

A study of high speed ground transportation options to connect LAX, Downtown Los Angeles and Palmdale determined the potential feasibility of deploying maglev technology along public rights-of-way using primarily private funds.

February 2002

ORANGELINE MAGLEV STUDY GETS UNDERWAY

Fifteen local cities along the former Pacific Electric Red Car corridor serving Los Angeles and Orange Counties join with the Gateway Cities Council of Governments in support of a 3-month maglev feasibility study funded by local cities with matching funds from SCAG. Orange County Transportation Authority funds additional study of Western Orange County transit alternatives.

July 2002

ORANGELINE STUDY CONCLUDES MAGLEV IS VIABLE AS SELF-FINANCED PROJECT

Following completion of the study, the Gateway Cities Council of Governments of 27 cities in Southeast Los Angeles County considers steps to deploy a 33-mile maglev line connecting downtown Los Angeles to central Orange County.

October 2002

CERRITOS INITIATES SUPPORT FOR ORANGELINE JOINT POWERS AUTHORITY

The Cerritos City Council unanimously approves support for the formation of a joint powers authority that would conduct studies necessary to begin construction of the Orangeline.

November 2002

NINE CITIES PASS RESOLUTIONS IN SUPPORT OF ORANGELINE

Artesia, Bellflower, Bell, Downey, Huntington Park, Maywood, Paramount, and Stanton join Cerritos in supporting the Orangeline Development Authority.

February 2003

GATEWAY CITIES COUNCIL OF GOVERNMENTS SUPPORTS ORANGELINE

Local council representing 27 cities and 1.8 million residents in Los Angeles County is the 10th public agency to support formation of a joint powers authority.

TWO MORE CITIES JOIN IN SUPPORT OF ORANGELINE

Vernon and South Gate pass resolutions expressing support for the Orangeline bringing total to 18 cities that support formation of Orangeline Development Authority.

March 2003

SOUTH GATE MAYOR HECTOR DE LA TORRE ELECTED CHAIR OF ORANGELINE DEVELOPMENT AUTHORITY

Cerritos Mayor Bruce Barrows calls to order the first meeting of the Orangeline Development Authority at which South Gate Mayor Hector De La Torre is unanimously elected Interim Chair of the Authority. Cerritos City Manager Art Gallucci is appointed Board Secretary.

TWO MORE CITIES JOIN IN SUPPORT OF ORANGELINE

Garden Grove and Huntington Beach pass resolutions expressing support of the Orangeline.

SECRETARY GALLUCCI ISSUES FORMAL REQUEST TO MEMBER CITIES TO JOIN THE ORANGELINE DEVELOPMENT AUTHORITY – A JOINT POWERS AGENCY

An invitation sent on behalf of the Authority by Board Secretary Art Gallucci asks for local city councils to approve entry into the Orangeline Development Authority Joint Exercise of Powers Agreement.

June 2003

FORMAL ESTABLISHMENT OF THE ORANGELINE DEVELOPMENT AUTHORITY

The cities of Bell and South Gate become the first to adopt the Joint Exercise of Powers Agreement, effectively establishing the Orangeline Development Authority on June 10, 2003.

LOCAL CITIES CONTRIBUTE FUNDS TO THE ORANGELINE DEVELOPMENT AUTHORITY

In a demonstration of strong support of the maglev project, the City of Cerritos becomes the first of many cities to pay its proportionate member investment contribution, thus establishing a fund for the Authority.

FUNDING PROPOSAL SENT TO HOUSE OF REPRESENTATIVES

Congresswoman Linda Sanchez submits a funding request on behalf of the Orangeline Development Authority to the U.S. Congress House Transportation and Infrastructure Committee.

April 2004

U.S. HOUSE OF REPRESENTATIVES DESIGNATES ORANGELINE AS A NATIONAL "HIGH PRIORITY PROJECT"

HR 3550, the House transportation reauthorization bill, recognizes the importance of the Orangeline; includes support language and funding to initiate environmental studies for the project.

CITY OF PALMDALE, CALIFORNIA BECOMES THIRTEENTH MEMBER CITY OF THE ORANGELINE DEVELOPMENT AUTHORITY

The City of Palmdale, located in the Antelope Valley in north Los Angeles County looks to the Orangeline to stimulate economic development and provide improved access to and from the southern part of the County, and to improve access to Palmdale Regional Airport.

September 2004

ORANGELINE ATTRACTS INTERNATIONAL INDUSTRY INTEREST

An international team of firms led by Lockheed Martin is selected as development partner to the Authority. Team commits to investing $750,000 in development planning studies. Negotiations of a partnership agreement are authorized. HDR, Inc. is selected as environmental planning consultant, along with four other firms that will provide as-needed planning services.

November 2004

SANTA CLARITA CITY COUNCIL, BY UNANIMOUS VOTE, APPROVES CITY'S PARTICIPATION AS A MEMBER OF ORANGELINE DEVELOPMENT AUTHORITY

The City of Santa Clarita City Council approves motion authorizing the City's participation as a member of the Orangeline Development Authority. The City becomes the 14th member city of the Orangeline Development Authority.

April 2005

DEVELOPMENT AGREEMENT WITH PRIVATE PARTNER TEAM APPROVED – CONSORTIUM COMMITS OVER $1 MILLION TO NEXT DEVELOPMENT PHASE

The Orangeline Development Authority Board of Directors approves a development agreement with a consortium of 24 local, national and global firms led by ARCADIS, headquartered in the Netherlands with its principle U.S. office in the Denver area.

December 2005

AUTHORITY AND ARCADIS INITIATE $1.5 MILLION ORANGELINE HIGH SPEED MAGLEV PHASE 1 PRELIMINARY ENGINEERING WORK PROGRAM

The work follows initial studies to assess the feasibility of a privately funded high speed maglev system from Palmdale to Irvine.

November 2006

AUTHORITY BOARD APPROVES FINAL MILESTONE REPORT CONFIRMING FEASIBILITY OF ORANGELINE HIGH SPEED MAGLEV PROJECT

Adoption of the Milestone 10 – Financial Plan completes Phase 1 preliminary engineering. 108-mile system would extend from Palmdale to Irvine and include 18 stations. The $18.7 billion project is planned to be privately funded with a target date for beginning operation as early as 2012.

AUTHORITY SUBMITS $200 MILLION PROPOSAL AND APPLICATION TO STATE FOR PHASE 2 PRELIMINARY ENGINEERING

Funding would come from voter-approved $19.9 billion infrastructure bond measure and be used to complete pre-construction planning and engineering and to secure $18.7 billion project revenue bonds to finance construction of 108-mile high speed maglev from Palmdale to Irvine.

Orangeline Development Authority
Orangeline High Speed Maglev
Milestone 10 - Financial Plan Supplement

Financial Model 2h (2007-2062)

June 7, 2007

Project Summary

2007 dollars

Project Cash Surplus	$23,312,080,297
Operating Reserves	$2,000,132,327
Station-area Improvements and Feeder Services	$21,116,691,148
Investor Interest Earnings	$23,359,337,310
User Cost Savings (Compared to Owning/Driving a Car)	$3,113,357,602
User Travel Delay Savings (Compared to Driving a Car)	$36,301,274,973
Total Project Benefits	$98,369,317,795
Project Cost (including vehicle replacement in year 25)	$22,693,799,040
Benefit/Cost Ratio (Without Value of Emission Savings)	4.3
Emission Savings	$6,025,162,484
Benefit/Cost Ratio (with Emission Benefits)	4.6
Reduction in Gasoline Consumption (gallons)	2,549,314,071
Annual Reduction in NOx and CO_2 Emissions (tons in 2027)	744,985

Project Description

Orangeline High Speed Maglev from Palmdale in northern Los Angeles County to Irvine in southern Orange County

	Length (miles)	Cost	Schedule
Preconstruction Phase	108	$199,586,640	2007 - 2009
Construction Phase			
a	20	$4,326,300,000	2010 - 2012
b	35	$6,729,800,000	2012 - 2015
c	53	$7,973,851,600	2014 - 2017

	Average Speed (mph)	Peak Period Service Frequency (minutes)	Off-Peak Period Service Frequency (minutes)
Operation Phase	90	5	10

The project is fully described in Project Milestone Reports and summarized in Milestone 10 - Financial Plan, which are available for viewing and downloading at www.orangeline.calmaglev.org

		Debt	Revenue							Construction, Operating & Reserve Expenses					Interest			Operating Debt / Surplus		Debt
	Year	Beginning debt balance	Daily Passenger Trips 3.00% 1.10%	Annual Passenger Trips	Average Fare Received 1.70% 3.26%	Annual Passenger Fare Revenues	Annual Freight Concessions Revenues	Annual Other Revenues	Total Annual Revenues	Annual Construction Expenses (debt)	System O&M Expense annual escalation 3%	Station-area Improvements & Feeder Services Operating Expense 30%	Reserves Operating Expense 3%	Annual Operating Expenses Sum	Interest Rates	Interest Expense	Interest Earnings	Revenue minus Expenses (debt)	Revenue minus Expenses (surplus)	Ending Debt/Expense Balance
	2007	$0			**$18.00**					$51,915,600				$0	10.0%	$0	$0	-$51,915,600	$0	$51,915,600
	2008	$51,915,600			$18.54					$77,238,876				$0	10.0%	$5,191,560	$0	-$82,430,436	$0	$134,346,036
	2009	$134,346,036			$19.10					$77,108,164				$0	10.0%	$13,434,604	$0	-$90,542,768	$0	$224,888,804
	2010	$224,888,804			$19.67					$1,050,547,738				$0	8.0%	$17,991,104	$0	-$1,068,538,842	$0	$1,293,427,646
	2011	$1,293,427,646			$20.26					$1,623,096,255				$0	8.0%	$103,474,212	$0	-$1,726,570,467	$0	$3,019,998,112
	2012	$3,019,998,112			$20.87					$2,229,052,190	$75,158,959			$75,158,959	8.0%	$241,599,849	$0	-$2,545,810,998	$0	$5,565,809,110
1	2013	$5,565,809,110	91,569	27,928,605	$21.22	$592,691,669	$53,342,250	$99,925,981	$745,959,900	$3,443,885,634	$77,413,727	$0	$20,056,385	$97,470,112	8.0%	$445,264,729	$0	-$3,240,660,575	$0	$8,806,469,685
2	2014	$8,806,469,685	109,883	33,514,326	$21.58	$723,320,913	$65,098,882	$123,180,719	$911,600,514	$4,729,602,937	$79,736,139	$0	$24,955,931	$104,692,070	8.0%	$704,517,575	$0	-$4,627,212,068	$0	$13,433,681,753
3	2015	$13,433,681,753	131,860	40,217,191	$21.95	$882,740,842	$79,446,676	$151,824,893	$1,114,012,411	$4,871,491,025	$225,852,614	$0	$26,644,794	$252,497,408	8.0%	$1,074,694,540	$0	-$5,084,670,563	$0	$18,518,352,315
4	2016	$18,518,352,315	158,232	48,260,629	$22.32	$1,077,296,924	$96,956,723	$187,100,699	$1,361,354,346	$3,763,226,817	$232,628,192	$0	$33,861,785	$266,489,977	8.0%	$1,481,468,185	$0	-$4,149,830,633	$0	$22,668,182,948
5	2017	$22,668,182,948	189,878	57,912,755	$22.70	$1,314,733,166	$118,325,985	$230,534,552	$1,663,593,703	$1,671,901,322	$470,501,093	$0	$35,792,778	$506,293,871	8.0%	$1,813,454,636	$0	-$2,328,056,127	$0	$24,996,239,075
6	2018	$24,996,239,075	195,574	59,650,138	$23.09	$1,377,196,138	$123,947,652	$243,767,920	$1,744,911,711		$484,616,126	$0	$37,808,868	$522,424,993	6.5%	$1,624,755,540	$0	-$402,268,822	$0	$25,398,507,897
7	2019	$25,398,507,897	201,441	61,439,642	$23.48	$1,442,626,727	$129,836,405	$257,713,089	$1,830,176,221		$499,154,610	$0	$39,930,648	$539,085,258	6.5%	$1,650,903,013	$0	-$359,812,050	$0	$25,758,319,947
8	2020	$25,758,319,947	207,485	63,282,831	$23.88	$1,511,165,923	$136,004,933	$272,402,420	$1,919,573,276		$514,129,248	$0	$42,163,321	$556,292,569	6.5%	$1,674,290,797	$0	-$311,010,090	$0	$26,069,330,037
9	2021	$26,069,330,037	213,709	65,181,316	$24.29	$1,582,961,416	$142,466,527	$287,868,965	$2,013,296,908		$529,553,125	$0	$44,512,313	$574,065,439	6.5%	$1,694,506,452	$0	-$255,274,983	$0	$26,324,605,020
10	2022	$26,324,605,020	220,121	67,136,755	$24.70	$1,658,167,912	$149,235,112	$304,146,355	$2,111,549,379		$545,439,719	$0	$46,983,290	$592,423,009	6.5%	$1,711,099,326	$0	-$191,972,956	$0	$26,516,577,976
11	2023	$26,516,577,976	226,724	69,150,858	$25.12	$1,736,947,470	$156,325,272	$321,268,669	$2,214,541,412		$561,802,911	$0	$49,582,155	$611,385,066	5.5%	$1,458,411,789	$0	$0	$144,744,557	$26,371,833,419
12	2024	$26,371,833,419	233,526	71,225,384	$25.55	$1,819,469,844	$163,752,286	$339,270,278	$2,322,492,409		$578,656,998	$72,320,853	$52,315,062	$703,292,913	5.5%	$1,450,450,838	$0	$0	$168,748,657	$26,203,084,762
13	2025	$26,203,084,762	240,532	73,362,145	$25.98	$1,905,912,857	$171,532,157	$358,185,649	$2,435,630,663		$596,016,708	$102,976,762	$55,188,419	$754,181,889	5.5%	$1,441,169,662	$0	$0	$240,279,112	$25,962,805,650
14	2026	$25,962,805,650	247,748	75,563,010	$26.42	$1,996,462,776	$179,681,650	$378,049,122	$2,554,193,548		$613,897,209	$136,239,941	$58,208,890	$808,346,041	5.5%	$1,427,954,311	$0	$0	$317,893,196	$25,644,912,453
15	2027	$25,644,912,453	**255,180**	77,829,900	$26.87	$2,091,314,723	$188,218,325	$398,894,639	$2,678,427,687		$632,314,126	$172,277,991	$61,383,407	$865,975,523	5.5%	$1,410,470,185	$0	$0	$401,981,979	$25,242,930,475
16	2028	$25,242,930,475	257,987	78,686,029	$27.75	$2,183,245,990	$196,492,139	$413,113,277	$2,792,851,406		$651,283,549	$206,687,893	$64,247,036	$922,218,479	5.5%	$1,388,361,176	$0	$0	$482,271,751	$24,760,658,723
17	2029	$24,760,658,723	260,825	79,551,575	$28.65	$2,279,218,427	$205,129,658	$427,707,778	$2,912,055,863		$670,822,056	$243,648,169	$67,237,014	$981,707,239	5.5%	$1,361,836,230	$0	$0	$568,512,395	$24,192,146,329
18	2030	$24,192,146,329	263,694	80,426,643	$29.58	$2,379,409,679	$214,146,871	$442,673,895	$3,036,230,445		$690,946,717	$283,307,150	$70,358,512	$1,044,612,380	5.5%	$1,330,568,048	$0	$0	$661,050,017	$23,531,096,311
19	2031	$23,531,096,311	266,595	81,311,336	$30.55	$2,484,005,197	$223,560,468	$458,005,361	$3,165,571,025		$711,675,119	$325,820,620	$73,616,877	$1,111,112,616	5.5%	$1,294,210,297	$0	$0	$760,248,112	$22,770,848,199
20	2032	$22,770,848,199	269,527	82,205,760	$31.55	$2,593,198,588	$233,387,873	$473,693,625	$3,300,280,086		$733,025,373	$371,352,126	$77,017,641	$1,181,395,140	5.5%	$1,252,396,651	$0	$0	$866,488,295	$21,904,359,904
21	2033	$21,904,359,904	272,492	83,110,024	$32.57	$2,707,191,967	$243,647,277	$489,727,578	$3,440,566,823		$755,016,134	$420,073,312	$80,566,521	$1,255,655,966	5.5%	$1,204,739,795	$0	$0	$980,171,061	$20,924,188,843
22	2034	$20,924,188,843	275,489	84,024,234	$33.64	$2,826,196,336	$254,357,670	$506,093,236	$3,586,647,242		$777,666,618	$472,164,246	$84,269,419	$1,334,100,282	5.5%	$1,150,830,386	$0	$0	$1,101,716,574	$19,822,472,269
23	2035	$19,822,472,269	278,520	84,948,501	$34.73	$2,950,431,970	$265,538,877	$522,773,395	$3,738,744,243		$800,996,616	$527,813,767	$88,132,429	$1,416,942,812	5.5%	$1,090,235,975	$0	$0	$1,231,565,456	$18,590,906,813
24	2036	$18,590,906,813	281,583	85,882,934	$35.86	$3,080,128,829	$277,211,595	$539,747,255	$3,897,087,679		$825,026,515	$587,219,836	$92,161,835	$1,504,408,186	5.5%	$1,022,499,875	$0	$0	$1,370,179,618	$17,220,727,195
25	2037	$17,220,727,195	284,681	86,827,646	$37.03	$3,215,526,980	$289,397,428	$556,989,997	$4,061,914,406	$8,408,670,230	$849,777,310	$650,589,896	$96,364,113	$1,596,731,319	5.5%	$947,139,996	$0	-$6,890,627,139	$0	$24,111,354,335
26	2038	$24,111,354,335	287,812	87,782,750	$38.24	$3,356,877,045	$302,118,934	$574,472,328	$4,233,468,307		$875,270,630	$0	$100,745,930	$976,016,560	5.5%	$1,326,124,488	$0	$0	$1,931,327,259	$22,180,027,076
27	2039	$22,180,027,076	290,978	88,748,361	$39.49	$3,504,440,660	$315,399,659	$592,159,968	$4,412,000,287		$901,528,748	$655,576,771	$105,314,146	$1,662,419,666	5.5%	$1,219,901,489	$0	$0	$1,529,679,132	$20,650,347,944
28	2040	$20,650,347,944	294,179	89,724,593	$40.77	$3,658,490,965	$329,264,187	$610,013,093	$4,597,768,245		$928,574,611	$727,004,607	$110,075,809	$1,765,655,026	5.5%	$1,135,769,137	$0	$0	$1,696,344,082	$18,954,003,862
29	2041	$18,954,003,862	297,415	90,711,563	$42.10	$3,819,313,106	$343,738,180	$627,985,725	$4,791,037,010		$956,431,849	$803,129,038	$115,038,155	$1,874,599,042	5.5%	$1,042,470,212	$0	$0	$1,873,967,756	$17,080,036,106
30	2042	$17,080,036,106	300,687	91,709,390	$43.48	$3,987,204,763	$358,848,429	$646,025,048	$4,992,078,240		$985,124,805	$884,202,854	$120,208,603	$1,989,536,262	5.5%	$939,401,986	$0	$0	$2,063,139,993	$15,016,896,113
31	2043	$15,016,896,113	303,994	92,718,194	$44.89	$4,162,476,702	$374,622,903	$664,070,673	$5,201,170,279	$1,014,678,549	$970,490,308	$125,594,752	$2,110,763,608	$825,929,286	5.5%	$2,264,477,384	$0	$0	$2,264,477,384	$12,752,418,729
32	2044	$12,752,418,729	307,338	93,738,094	$46.36	$4,345,453,351	$391,090,802	$682,053,816	$5,418,597,968	$1,045,118,905	$1,062,267,498	$131,204,372	$2,238,590,775	$701,383,030	5.5%	$0	$0	$0	$2,478,624,163	$10,273,794,566
33	2045	$10,273,794,566	310,719	94,769,213	$47.87	$4,536,473,396	$408,282,606	$699,896,400	$5,644,652,402	$1,076,472,472	$1,159,822,749	$137,045,398	$2,373,340,619	$565,058,701	5.5%	$0	$0	$0	$2,706,253,081	$7,567,541,485
34	2046	$7,567,541,485	314,137	95,811,674	$49.43	$4,735,890,416	$426,230,137	$717,510,072	$5,879,630,625	$1,108,766,647	$1,263,456,983	$143,125,919	$2,515,349,549	$416,214,782	5.5%	$0	$0	$0	$2,948,066,294	$4,619,475,191
35	2047	$4,619,475,191	317,592	96,865,603	$51.04	$4,944,073,528	$444,966,618	$734,795,118	$6,123,835,264	$1,142,029,646	$1,373,484,094	$149,454,169	$2,664,967,909	$254,071,135	5.5%	$0	$0	$0	$3,204,796,220	$1,414,678,971
36	2048	$1,414,678,971	321,086	97,931,124	$52.70	$5,161,408,079	$464,526,727	$763,801,261	$6,389,736,067	$1,176,290,535	$1,493,770,447	$156,403,366	$2,826,464,348	$77,807,343	5.5%	$0	$0	$0	$3,485,464,376	-$2,070,785,405
37	2049	-$2,070,785,405	324,618	99,008,367	$54.42	$5,388,296,352	$484,946,672	$795,369,167	$6,668,612,191		$1,211,579,251	$1,587,996,585	$163,710,988	$2,963,286,825	5.5%	$0	-$113,893,197	$0	$3,819,218,563	-$5,890,003,968
38	2050	-$5,890,003,968	328,188	100,097,459	$56.20	$5,625,158,316	$506,264,248	$828,241,775	$6,959,664,339		$1,247,926,629	$1,662,115,674	$171,352,131	$3,081,394,434	5.5%	$0	-$323,950,218	$0	$4,202,220,124	-$10,092,224,092
	Subtoal			2,938,246,549		$105,637,119,943	$9,507,340,795	$17,721,053,793	$132,865,514,531	$31,997,736,787	$27,852,900,789	$18,215,810,171	$3,152,633,181	$49,221,344,142		$41,992,052,925	-$437,843,416	-$33,407,205,116	$43,499,429,207	-$9,654,380,676
39	2051	-$10,092,224,092	331,798	101,198,531	$58.03	$5,872,432,400	$528,518,916	$862,473,007	$7,263,424,324		$1,285,364,428	$1,739,615,430	$179,341,797	$3,204,321,655	5.5%	$0	-$555,072,325	$0	$4,614,174,994	-$14,706,399,086
40	2052	-$14,706,399,086	335,448	102,311,714	$59.92	$6,130,576,307	$551,751,868	$898,119,017	$7,580,447,192		$1,323,925,361	$1,820,647,853	$187,695,655	$3,332,268,869	5.5%	$0	-$808,851,950	$0	$5,057,030,273	-$19,763,429,359
41	2053	-$19,763,429,359	339,138	103,437,143	$61.87	$6,400,067,859	$576,006,107	$935,238,276	$7,911,312,242		$1,363,643,122	$1,905,371,714	$196,430,074	$3,465,444,909	5.5%	$0	-$1,086,988,615	$0	$5,532,855,948	-$25,296,285,307
42	2054	-$25,296,285,307	342,869	104,574,952	$63.89	$6,681,405,882	$601,326,529	$973,891,674	$8,256,624,085		$1,404,552,415	$1,993,952,856	$205,562,150	$3,604,067,421	5.5%	$0	-$1,391,295,692	$0	$6,043,852,356	-$31,340,137,663
43	2055	-$31,340,137,663	346,640	105,725,276	$65.97	$6,975,111,131	$627,760,002	$1,014,142,617	$8,617,013,749		$1,446,688,988	$2,086,564,506	$215,109,743	$3,748,363,236	5.5%	$0	-$1,723,707,571	$0	$6,592,358,084	-$37,932,495,747
44	2056	-$37,932,495,747	350,453	106,888,254	$68.12	$7,281,727,251	$655,355,453	$1,056,057,131	$8,993,139,834		$1,490,089,657	$2,183,387,602	$225,091,505	$3,898,568,764	5.5%	$0	-$2,086,287,266	$0	$7,180,858,336	-$45,113,354,084
45	2057	-$45,113,354,084	354,308	108,064,025	$70.35	$7,601,821,786	$684,163,961	$1,099,703,972	$9,385,689,719		$1,534,792,347	$2,284,611,135	$235,526,921	$4,054,930,403	5.5%	$0	-$2,481,234,475	$0	$7,811,993,790	-$52,925,347,874
46	2058	-$52,925,347,874	358,206	109,252,729	$72.64	$7,935,987,229	$714,238,851	$1,145,154,737	$9,795,380,818		$1,580,836,117	$2,390,432,508	$246,436,341	$4,217,704,966	5.5%	$0	-$2,910,894,133	$0	$8,488,569,984	-$61,413,917,858
47	2059	-$61,413,917,858	362,146	110,454,509	$75.01	$8,284,842,118	$745,635,791	$1,192,483,983	$10,222,961,891		$1,628,261,201	$2,501,057,901	$257,841,021	$4,387,160,122	5.5%	$0	-$3,377,765,482	$0	$9,213,567,251	-$70,627,485,109
48	2060	-$70,627,485,109	366,130	111,669,509	$77.45	$8,649,032,178	$778,412,896	$1,241,769,346	$10,669,214,420		$1,677,109,037	$2,616,702,667	$269,763,161	$4,563,574,865	5.5%	$0	-$3,884,511,681	$0	$9,990,151,236	-$80,617,636,345
49	2061	-$80,617,636,345	370,157	112,897,874	$79.98	$9,029,231,524	$812,630,837	$1,293,091,673	$11,134,954,034		$1,727,422,308	$2,737,591,732	$282,225,952	$4,747,239,992	5.5%	$0	-$4,433,969,999	$0	$10,821,684,041	-$91,439,320,387
50	2062	-$91,439,320,387	374,229	114,139,750	$82.58	$9,426,143,901	$848,352,951	$1,346,535,152	$11,621,032,004		$1,779,244,977	$2,863,960,025	$295,253,611	$4,938,458,613	5.5%	$0	-$5,029,162,621	$0	$11,711,736,012	-$103,151,056,399
	Total	-$91,439,320,387		4,228,860,817		$195,905,499,511	$17,631,494,956	$30,779,714,377	$244,316,708,844	$31,997,736,787	$46,094,830,747	$45,339,706,099	$5,948,911,112	$97,383,447,958		$41,992,052,925	-$30,207,585,226	-$33,407,205,116	$136,558,261,514	-$103,151,056,399

Color Code

- Planning Phase
- Construction Phase
- Operation Phase - Increasing Debt
- Operation Phase - Decreasing Debt
- Operation Phase - Zero Debt

ORANGELINE MAGLEV
INITIAL FINANCING SCENARIO FOR CONSTRUCTION

INPUTS		Irvine-Palmdale	Irvine-Santa Clarita							
Capital Cost (1,000 $)	$	**19,228,000,000**	$12,996,703,704							
Vehicle Replacement (in Year 25)	$	**3,464,260,800**		Source:	Milestone 10	$3,363,360,000	2006$			
O&M Cost (in 2013)	$	**405,858,376**		Source:	Milestone 10	$329,567,387	2006$	=	$339,454,409	2007$
Capital Cost Escalation Rate		**3.0%**								
O&M Cost Escalation Rate		**3.0%**								
Short Term Interest Rate		**10.0%**								
TIFIA Interest Rate		8.0%								
Tax-exempt/vendor interest rate		8.0%				Construction Schedule extended from that assumed in Milestone 10				

	capital cost value	$19,228,000,000	$19,804,840,000	$20,398,985,200	$21,010,954,756	$21,641,283,399	$22,290,521,901	$22,959,237,558	$23,648,014,684	$24,357,455,125	$25,088,178,779	$25,840,824,142	
(all figures in millions, except for O&M costs	in year	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	
CAPITAL USES													
% of capital applied		0.27%	0.39%	0.38%	5.00%	7.50%	10.00%	15.00%	20%	20.00%	15.00%	6.47%	100.01%
Total capital required		51,915,600	77,238,876	77,108,164	1,050,547,738	1,623,096,255	2,229,052,190	3,443,885,634	4,729,602,937	4,871,491,025	3,763,226,817	1,671,901,322	23,589,066,557
DEBT													
Short-term loan proceeds		51,915,600	77,238,876	77,108,164									
Short-term interest		2,595,780	9,313,082	17,961,742									
Total Short-term outstanding debt		54,511,380	141,063,338	236,133,244									
TIFIA Principal					350,182,579	541,032,085	743,017,397	1,147,961,878	1,576,534,312	1,623,830,342	1,254,408,939	557,300,441	
TIFIA Interest					20,304,190	57,577,111	113,545,260	198,268,051	323,109,343	476,972,677	630,260,062	753,149,242	
Total Outstanding TIFIA debt				78,711,081	449,197,850	1,047,807,047	1,904,369,703	3,250,599,632	5,150,243,287	7,251,046,306	9,135,715,307	10,446,164,990	
Tax-exempt/vendor principal					700,365,159	1,082,064,170	1,486,034,793	2,295,923,756	3,153,068,625	3,247,660,683	2,508,817,878	1,114,600,881	
Tax-exempt/vendor interest					40,608,379	115,154,223	227,090,519	396,536,103	646,218,686	953,945,353	1,260,520,124	1,506,298,484	
Total cumu tax-exempt/vendor debt				157,422,163	898,395,700	2,095,614,093	3,808,739,406	6,501,199,264	10,300,486,575	14,502,092,612	18,271,430,613	20,892,329,979	
Total cumulative debt		54,511,380	141,063,338	236,133,244	1,347,593,551	3,143,421,140	5,713,109,109	9,751,798,896	15,450,729,862	21,753,138,917	27,407,145,920	31,338,494,969	

TOTAL OUTSTANDING DEBT TO BE CARRIED OVER TO DEBT SCHEDULE SHEET	**$ 31,338,494,969**

MS 10 Ridership in 2027 255180

	Construction Capital	Vehicle Replacement Capital	O&M
2006	$18,667,961,165	$3,262,459,200	$330,000,000
2007	$19,228,000,000	$3,360,332,976	$339,900,000
2008	$19,804,840,000	$3,464,260,800	$350,097,000
2009	$20,398,985,200	$3,568,188,624	$360,599,910
2010	$21,010,954,756	$3,675,234,283	$371,417,908
2011	$21,641,283,399	$3,785,491,311	$382,560,445
2012	$22,290,521,901	$3,899,056,051	$394,037,258
2013	$22,959,237,558	$4,016,027,732	$405,858,376
2014	$23,648,014,684	$4,136,508,564	$418,034,127
2015	$24,357,455,125	$4,260,603,821	$430,575,151
2016	$25,088,178,779	$4,388,421,936	$443,492,406
2017	$25,840,824,142	$4,520,074,594	$456,797,178
2018	$26,616,048,866	$4,655,676,831	$470,501,093
2019	$27,414,530,332	$4,795,347,136	$484,616,126
2020		$4,939,207,550	$499,154,610
2021		$5,087,383,777	$514,129,248
2022		$5,240,005,290	$529,553,125
2023		$5,397,205,449	$545,439,719
2024		$5,559,121,612	$561,802,911
2025		$5,725,895,261	$578,656,998
2026		$5,897,672,119	$596,016,708
2027		$6,074,602,282	$613,897,209
2028		$6,256,840,351	$632,314,126
2029		$6,444,545,561	$651,283,549
2030		$6,637,881,928	$670,822,056
2031		$6,837,018,386	$690,946,717
2032		$7,042,128,937	$711,675,119
2033		$7,253,392,806	$733,025,373
2034		$7,470,994,590	$755,016,134
2035		$7,695,124,427	$777,666,618
2036		$7,925,978,160	$800,996,616
2037		$8,163,757,505	$825,026,515
2038		$8,408,670,230	$849,777,310
2039			$875,270,630
2040			$901,528,748
2041			$928,574,611
2042			$956,431,849
2043			$985,124,805
2044			$1,014,678,549
2045			$1,045,118,905
2046			$1,076,472,472
2047			$1,108,766,647
2048			$1,142,029,646
2049			$1,176,290,535
2050			$1,211,579,251
2051			$1,247,926,629
2052			$1,285,364,428
2053			$1,323,925,361
2054			$1,363,643,122
2055			$1,404,552,415
2056			$1,446,688,988
2057			$1,490,089,657
2058			$1,534,792,347
2059			$1,580,836,117
2060			$1,628,261,201
2061			$1,677,109,037
2062			$1,727,422,308

Calculations for Comparing Maglev and Auto Commuting Costs and travel time savings

	Freeway Average Trip Length 30.00% walk access	91 Express Lane Baseline Average Trip Length	Auto Access trips 70.00% auto access	Travel Time Savings	Year	Percent Walk Access 5.0%	Walk Acces Users Cost Savings per year walk access	Walk Acces Users Delay Savings per year walk access	Auto Access Users Cost Savings per year auto access	Auto Access Users Delay Savings per year auto access	Cost Savings per year Total	FTA Value of Time Savings $35.82 per hour
Maglev cost												
Daily one-direction trips	255,180	255,180	255,180	12,927,841	2013	14.63%	$23,073,576	$28,230,578	-$135,847,882	$164,729,757	-$112,774,305	$463,104,804
Daily users (making two-direction trips)	127,590	127,590	127,590	15,513,409	2014	15.40%	$29,145,570	$35,659,678	-$161,547,083	$195,892,724	-$132,401,512	$555,725,765
Annual Ridership (Daily times 305 days per year)	77,829,900	77,829,900	77,829,900	18,616,091	2015	16.21%	$36,815,457	$45,043,803	-$191,999,183	$232,819,079	-$155,183,726	$666,870,918
Annual round trips	38,914,950	38,914,950	38,914,950	22,339,309	2016	17.06%	$46,503,735	$56,897,436	-$228,052,936	$276,538,023	-$181,549,200	$800,245,101
Average Fare per one-way trip (Milestone 10)	$18.00	$18.00	$18.00	26,807,171	2017	17.96%	$58,741,560	$71,870,445	-$270,700,048	$328,252,105	-$211,958,488	$960,294,122
Average one-way trip length	20.83	20.83	20.83	27,611,386	2018	18.91%	$63,688,218	$77,922,693	-$275,608,020	$334,203,534	-$211,919,802	$989,102,945
Average Fare per mile	$0.86	$0.86	$0.86	28,439,728	2019	19.90%	$69,051,437	$84,484,604	-$280,392,660	$340,005,410	-$211,341,223	$1,018,776,034
Annual Fare	**$1,400,938,200**	**$1,400,938,200**	**$1,400,938,200**	29,292,919	2020	20.95%	$74,866,294	$91,599,097	-$285,027,483	$345,625,617	-$210,161,188	$1,049,339,315
Annual Fare per User	$10,980.00	$10,980.00	$10,980.00	30,171,707	2021	22.05%	$81,170,824	$99,312,706	-$289,483,291	$351,028,750	-$208,312,467	$1,080,819,494
Annual Private Subsidy per User ($180 per month parking cash out)	$0.00	$0.00	$0.00	31,076,858	2022	23.21%	$88,006,262	$107,675,881	-$293,727,930	$356,175,819	-$205,721,668	$1,113,244,079
Annual Public Subsidy per User (MTA - $180 per month (it's currently $315))	$0.00	$0.00	$0.00	32,009,164	2023	24.44%	$95,417,316	$116,743,323	-$297,726,025	$361,023,927	-$202,308,709	$1,146,641,401
Annual Cost per User (after user subsidies)	$10,980.00	$10,980.00	$10,980.00	32,969,439	2024	25.72%	$103,452,458	$126,574,340	-$301,438,695	$365,525,928	-$197,986,237	$1,181,040,643
Average Cost per one-way trip (after fare subsidies)	$18.00	$18.00	$18.00	33,958,522	2025	27.08%	$112,164,244	$137,233,232	-$304,823,242	$369,630,044	-$192,658,997	$1,216,471,863
Monthly Maglev Cost per User	$915.00	$915.00	$915.00	34,977,278	2026	28.50%	$121,609,654	$148,789,715	-$307,832,810	$373,279,460	-$186,223,155	$1,252,966,019
Monthly Maglev Cost per User (after fare subsidies)	$915.00	$915.00	$915.00	36,026,596	2027	30.00%	$131,850,467	$161,319,375	-$310,416,022	$376,411,875	-$178,565,555	$1,290,554,999
Average round trip length (miles)	41.66	41.66	41.66	36,422,888	2028	31.50%	$139,965,864	$171,248,582	-$307,105,657	$372,397,711	-$167,139,793	$1,304,751,104
Annual Miles per passenger	12,706	12,706	12,706	36,823,540	2029	33.08%	$148,580,762	$181,788,933	-$303,344,958	$367,837,470	-$154,764,195	$1,319,103,366
Maglev User Cost per mile (after user subsidies)	$0.86	$0.86	$0.86	37,228,599	2030	34.73%	$157,725,908	$192,978,041	-$299,103,494	$362,694,252	-$141,377,585	$1,333,613,503
Average travel speed (mph)	90	90	90	37,638,114	2031	36.47%	$167,433,938	$204,855,840	-$294,348,932	$356,928,848	-$126,914,994	$1,348,283,252
Average round trip time (hours)	0.46	0.46	0.46	38,052,133	2032	38.29%	$177,739,497	$217,464,717	-$289,046,918	$350,499,603	-$111,307,421	$1,363,114,368
Annual travel time (hours)	18,013,298	18,013,298	18,013,298	38,470,707	2033	40.20%	$188,679,363	$230,849,670	-$283,160,955	$343,362,257	-$94,481,592	$1,378,108,626
Annual travel distance (passenger miles)	1,621,196,817	1,621,196,817	1,621,196,817	38,893,884	2034	42.21%	$200,292,578	$245,058,467	-$276,652,266	$335,469,791	-$76,359,688	$1,393,267,820
				39,321,717	2035	44.32%	$212,620,586	$260,141,816	-$269,479,657	$326,772,253	-$56,859,071	$1,408,593,766
Auto Cost				39,754,256	2036	46.54%	$225,707,383	$276,153,545	-$261,599,368	$317,216,579	-$35,891,985	$1,424,088,298
Daily users (making two-direction trips)	127,590	127,590	127,590	40,191,553	2037	48.87%	$239,599,672	$293,150,796	-$252,964,913	$306,746,400	-$13,365,241	$1,439,753,269
Average trip miles (round trip)	41.66	41.66	41.66	40,633,660	2038	51.31%	$254,347,032	$311,194,227	-$243,526,913	$295,301,838	$10,820,120	$1,455,590,555
Average Cost per one-way trip	$23.65	$34.06	$12.30	41,080,630	2039	53.88%	$270,002,092	$330,348,232	-$233,232,915	$282,819,290	$36,769,177	$1,471,602,051
Annual Operating Cost (include fixed costs)	$1,840,439,758	$2,651,038,166	$957,486,740	41,532,517	2040	56.57%	$286,620,721	$350,681,165	-$222,027,208	$269,231,199	$64,593,513	$1,487,789,674
Annual Cost per User	$14,424.64	$20,777.79	$7,504.40	41,989,375	2041	59.40%	$304,262,226	$372,265,591	-$209,850,617	$254,465,809	$94,411,609	$1,504,155,360
Monthly Auto Cost per User	$1,202.05	$1,731.48	$625.37	42,451,258	2042	62.37%	$322,989,566	$395,178,538	-$196,640,291	$238,446,907	$126,349,276	$1,520,701,069
Driver Cost per mile	$1.14	$1.64	$0.59	42,918,222	2043	65.49%	$342,869,574	$419,501,777	-$182,329,476	$221,093,548	$160,540,098	$1,537,428,781
Annual Miles per Driver	12,706	12,706	12,706	43,390,322	2044	68.76%	$363,973,196	$445,322,112	-$166,847,276	$202,319,762	$197,125,921	$1,554,340,498
Annual travel distance (total miles)	1,621,196,817	1,621,196,817	1,621,196,817	43,867,616	2045	72.20%	$386,375,747	$472,731,688	-$150,118,396	$182,034,247	$236,257,351	$1,571,438,243
Average travel speed (mph)	30	30	30	44,350,159	2046	75.81%	$410,157,174	$501,828,323	-$132,062,872	$160,140,037	$278,094,302	$1,588,724,064
Average round trip time (hours)	1.39	1.39	1.39	44,838,011	2047	79.60%	$435,402,348	$532,715,856	-$112,595,782	$136,534,156	$322,806,566	$1,606,200,028
Annual non-productive auto travel time (hours)	54,039,894	54,039,894	54,039,894	45,331,229	2048	80.00%	$442,409,733	$541,289,410	-$111,596,443	$135,322,352	$330,813,290	$1,623,868,229
Annual Delay (Hours) (Auto driving vs Maglev)	36,026,596	36,026,596	36,026,596	45,829,873	2049	80.00%	$447,276,240	$547,243,593	-$112,824,004	$136,810,898	$334,452,236	$1,641,730,779
Value of time savings	$14.93	$14.93	$14.93	46,334,001	2050	80.00%	$452,196,279	$553,263,273	-$114,065,068	$138,315,818	$338,131,211	$1,659,789,818
Annual Cost of Delay Time ($25/hr)	$537,731,250	$537,731,250	$537,731,250	46,843,675	2051	80.00%	$457,170,438	$559,349,169	-$115,319,784	$139,837,292	$341,850,654	$1,678,047,506
Annual Cost of non-productive Auto Travel Time	$1,350,997,348	$1,350,997,348	$1,350,997,348	47,358,956	2052	80.00%	$462,199,313	$565,502,009	-$116,588,301	$141,375,502	$345,611,011	$1,696,506,028
Total Cost (with delay cost)	**$2,378,171,007**	**$3,188,769,416**	**$1,495,217,990**	47,879,904	2053	80.00%	$467,283,505	$571,722,532	-$117,870,773	$142,930,633	$349,412,733	$1,715,167,595
Delta	$977,232,807	$1,787,831,216	$94,279,790	48,406,583	2054	80.00%	$472,423,624	$578,011,479	-$119,167,351	$144,502,870	$353,256,273	$1,734,034,438
Total Cost (with auto drive time cost)	**$3,191,437,105**	**$4,002,035,514**	**$2,308,484,088**	48,939,056	2055	80.00%	$477,620,284	$584,369,606	-$120,478,192	$146,092,401	$357,142,092	$1,753,108,817
Delta	$1,790,498,905	$2,601,097,314	$907,545,888	49,477,385	2056	80.00%	$482,874,107	$590,797,671	-$121,803,452	$147,699,418	$361,070,655	$1,772,393,014
Annual Cost per User (including cost of congestion delay time)	$18,639	18,639	$11,719	50,021,637	2057	80.00%	$488,185,722	$597,296,446	-$123,143,290	$149,324,111	$365,042,432	$1,791,889,337
Annual Cost per User (including cost of non-productive drive time)	$25,013	25,013	$18,093	50,571,875	2058	80.00%	$493,555,765	$603,866,707	-$124,497,866	$150,966,677	$369,057,899	$1,811,600,120
Driver cost per mile (including cost of non-productive drive time)	$1.97	$1.97	$1.42	51,128,165	2059	80.00%	$498,984,878	$610,509,240	-$125,867,343	$152,627,310	$373,117,535	$1,831,527,721
Monthly operating cost savings per Maglev User	$287	$816	-$290	51,690,575	2060	80.00%	$504,473,712	$617,224,842	-$127,251,883	$154,306,211	$377,221,828	$1,851,674,526
Monthly Savings per user, including value of delay time	$638	$1,168	$62	52,259,171	2061	80.00%	$510,022,923	$624,014,315	-$128,651,654	$156,003,579	$381,371,269	$1,872,042,946
Monthly Savings per user, including value of travel time	$1,169	$1,699	$593	52,834,022	2062	80.00%	$515,633,175	$630,878,473	-$130,066,822	$157,719,618	$385,566,352	$1,892,635,418
Annual Savings per Maglev user	**$3,445**	**$9,798**	**-$3,476**									
Annual Savings per user, including delay time	**$7,659**	**$14,012**	**$739**			Total (2007$)	$13,543,211,999	$16,570,153,588	-$10,429,854,397	$12,647,288,700	$3,113,357,602	$70,121,861,490
Annual Savings per user, including non-productive to productive travel time	**$14,033**	**$20,386**	**$7,113**	1,957,492,685 total								
Total Annual Operating cost savings	$439,501,558	$1,250,099,966	-$443,451,460			Total (2007$)		$3,113,357,602				
Total Annual Savings, including value of delay time	$977,232,807	$1,787,831,216	$94,279,790			Total (2007$)			$29,217,442,288			
Total Annual Savings including value of travel time	$1,790,498,905	$2,601,097,314	$907,545,888									
Assuming User Fare Subsidies												
Annual Savings per Maglev user with subsidies	**$3,445**	**$9,798**	**-$3,476**									
Annual Savings per user, including delay time	**$7,659**	**$14,012**	**$739**									
Annual Savings per user, including non-productive to productive travel time	**$14,033**	**$20,386**	**$7,113**									

The median household income of $42,148 was reported by the U.S. Census and using 2000 hours per year as specified in the departmental guidance, the hourly value of time in year 2000 was calculated at: $10.54 in 2000

FTA total value of time saved by new start project users $25.00 in 2000

The median income for a household in LA County was $42,189

The median income for Orange County OL cities was $56,361

Source: wikepedia

Unincorporated communities are included if their population is greater than 15,000 .

	Median Household Income	in 2000
Irvine: $85,624	$85,624.00	
La Palma: $68,438	$68,438.00	
West Garden Grove: $66,830	$66,830.00	
Cypress: $64,337	$64,337.00	
Orange: $58,994	$58,994.00	
Tustin: $55,985	$55,985.00	
Los Alamitos: $55,286	$55,286.00	
Buena Park: $50,336	$50,336.00	
Westminster: $49,450	$49,450.00	
Garden Grove: $47,754	$47,754.00	
Anaheim: $47,122	$47,122.00	
Santa Ana: $43,412	$43,412.00	
Stanton: $39,127	$39,127.00	
Total	$732,695.00	
Average for all households	$56,361.15	
Average for Orangeline Maglev Users	$70,451.44	in 2000

Calculation of Value of time based on FTA Guidance

	Household Income		
	National Average	Orange County	LA County
2000	$10.54	$70,451.44	$52,736.25
2001	$10.54	$70,451.44	$52,736.25
2002	$10.54	$70,451.44	$52,736.25
2003	$10.54	$70,451.44	$52,736.25
2004	$10.54	$70,451.44	$52,736.25
2005	$10.54	$70,451.44	$52,736.25
2006	$10.54	$70,451.44	$52,736.25
2007	$10.54	$70,451.44	$52,736.25
Value of time (2007 $s)	$10.54	$17.61	$13.18

Value of time (based on proportion of LA and OC passengers)	$14.93	per FTA formula
Total Value of time benefits of project	$35.82	per FTA formula
Total project benefits	$1,290,554,999	in 2027

The long run estimates of elasticity - how quickly riders change their behavior with respect to price and service attribute changes - are large. "In the long run, demand is strikingly elastic with respect to own price (-1.59), the variable cost of an auto trip (2.69), and the fixed cost of auto ownership (1.13)." (369) Thus,

a 10% increase in price will result in a 15.9% reduction in ridership

a 10% increase in the variable cost of an auto trip will increase transit ridership by 26.9%
a 10% increase in the fixed cost of auto ownership will increase transit ridership by 11.3%.

peak trains and 1.89 for non-peak trains. "Because the off-peak elasticity is greater than 1, ridership per train could be increased by increasing the frequency of service." (370) The estimated short (0.16) and long (0.42) run elasticities for changes in train speed suggest a 10 m.p.h. increase in speed (from an average of 22 m.p.h.) would increase short-run ridership by 7.2% and long-run ridership by 18.5%.

Automobile Driving Costs, 2005

CATEGORY		SMALL CAR	MIDSIZE CAR	LARGE CAR	SPORT UTILITY VEHICLE	VAN			auto access savings			
OPERATING COSTS (cents per mile)												
Gasoline & Oil		6.9	8.5	9.3	10.8	8.9		0.09	$0.16	$3.50	gallon (Observed)	
Maintenance		4.7	5.8	5.4	5.3	5.7		0.06	$0.10	21.4	miles per gallon (AAA)	
Tires		0.5	0.7	0.5	0.9	0.6		0.01	$0.01	25.68	passenger miles per gallon (1.2 pass per vehicle)	
SUBTOTAL		12.1	15	15.2	17	15.2		0.16	$0.27			
OWNERSHIP COSTS (cost per year, dollars)												
Insurance		1,456	1,195	1,212	1,398	1,130		0.11				
License, registration, taxes		333	390	445	435	389		0.03				
Depreciation (15,000 miles annually)		2,985	4,005	4,647	4,300	3,755		0.33				
Finance charge (10% down; loan @ 6%/5 yrs.)		553	740	925	891	739		0.06				
SUBTOTAL		5,327	6,330	7,229	7,024	6,013		0.50				
DEPRECIATION ADJUSTMENTS (dollars)												
(mileage under 15,000 miles annually)		-550	-925	-1,175	-950	-925			$0.08			
(mileage over 15,000 miles annually)		650	950	1,175	925	950						
TOTAL ANNUAL COST (dollars)										$0.59	Marginal Cost Savings from not driving	
10,000 miles per year		5,987	6,905	7,574	7,774	6,608					but retaining auto ownership	
15,000 miles per year		7,142	8,580	9,509	9,574	8,293						
20,000 miles per year		8,397	10,280	11,444	11,349	10,003						
TOTAL ANNUAL COST WITH PARKING ($10 dollars/day)	$10.00	per day							$0.24			
10,000 miles per year		9,637	10,555	11,224	11,424	10,258						
15,000 miles per year		10,792	12,230	13,159	13,224	11,943						
20,000 miles per year		12,047	13,930	15,094	14,999	13,653						
TOTAL COST PER MILE (dollars)						1.069			2007$			
10,000 miles per year	10000	0.60	0.69	0.76	0.78	0.66	0.64	0.74	0.81	0.83	0.71	0.75
15,000 miles per year	15000	0.48	0.57	0.63	0.64	0.55	0.51	0.61	0.68	0.68	0.59	0.61
20,000 miles per year	20000	0.42	0.51	0.57	0.57	0.50	0.45	0.55	0.61	0.61	0.53	0.55
TOTAL COST PER MILE WITH PARKING ($10 dollars/day)												
10,000 miles per year	10000	0.96	1.06	1.12	1.14	1.03	1.03	1.13	1.20	1.22	1.10	1.14
15,000 miles per year	15000	0.72	0.82	0.88	0.88	0.80	0.77	0.87	0.94	0.94	0.85	0.87
20,000 miles per year	20000	0.60	0.70	0.75	0.75	0.68	0.64	0.74	0.81	0.80	0.73	0.75
TOTAL EXPRESS LANE COST PER MILE ($5.00 toll) WITH PARKING ($10 dollars/day)												
10,000 miles per year	10000						1.53	1.63	1.70	1.72	1.60	1.64
15,000 miles per year	15000						1.27	1.37	1.44	1.44	1.35	1.37
20,000 miles per year	20000						1.14	1.24	1.31	1.30	1.23	1.25

Source: American Automobile Association and Runzheimer International, Your Driving Costs, 2005 Edition. Data for a popular model of each type listed assuming ownership of more than 5 years or 75,000 miles before replacement

Source: Orange County Register — 41.66 mi per day; 305 days; 12,706 miles

Source www.vtpi.org/tca/tca0504.pdf (parking costs)

Toll Lane Charges in Orange County

Toll Road	73	241	91	
Peak Charge	$4.57	$5.25	$9.50	
Length (miles)	16	25	10	
Cost per mile	$0.29	$0.21	$0.95	$0.48

Station-area Improvements and Feeder Services by Cities

	Potential Allocations to Member Cities (2007 Dollars)		Total Expenses	2017 Expenses	2027 Expenses	2037 Expenses
	Assumed Fare (2007$) = $18.00		**With Station Area Development - to 2064**	**With Station Area Development - to 2064**	**With Station Area Development - to 2064**	**With Station Area Development - to 2064**
	Cities	Population, 2000 (*some 2001-2005*)	3% Discount	3% Discount	3% Discount	3% Discount
Member Cities	**Artesia**	16,380	$94,942,062	$0	$428,863	$1,205,101
	Bell	36,664	$212,512,562	$0	$959,940	$2,697,425
	Bellflower	*74,900*	$434,136,779	$0	$1,961,038	$5,510,504
	Cerritos	51,488	$298,435,707	$0	$1,348,063	$3,788,048
	Cudahy	24,200	$140,268,492	$0	$633,606	$1,780,430
	Downey	*110,600*	$641,061,786	$0	$2,895,738	$8,137,005
	Huntington Park	61,348	$355,586,423	$0	$1,606,218	$4,513,463
	Los Alamitos	11,500	$66,656,515	$0	$301,094	$846,072
	Maywood	28,083	$162,775,209	$0	$735,271	$2,066,108
	Palmdale	*121,400*	$703,660,947	$0	$3,178,505	$8,931,577
	Paramount	55,266	$320,333,821	$0	$1,446,979	$4,066,001
	Santa Clarita	*155,100*	$898,993,517	$0	$4,060,841	$11,410,936
	South Gate	*99,800*	$578,462,624	$0	$2,612,972	$7,342,433
	Vernon	91	$527,456	$0	$2,383	$6,695
	Total Member Cities	**846,820**	**$4,908,353,901**	**$0**	**$22,171,512**	**$62,301,797**
	Average city population	60,487	$350,596,707	$0	$1,583,679	$4,450,128
Prospective LA County Cities	**Burbank**	*102,400*	$593,532,793	$0	$2,681,045	$7,533,719
	Glendale	*199,000*	$1,153,447,517	$0	$5,210,235	$14,640,724
	San Fernando	23,564	$136,582,097	$0	$616,955	$1,733,638
	Lancaster	*0*	$0	$0	$0	$0
	County Unincorporated (portion)	50,000	$289,810,934	$0	$1,309,104	$3,678,574
	Total LA County (w/o City of LA)	**1,210,284**	**$7,015,070,726**	**$0**	**$31,687,756**	**$89,042,380**
	Average city population	67,238	$389,726,151	$0	$1,760,431	$4,946,799
Prospective Orange County Cities	**La Palma**	15,400	$89,261,768	$0	$403,204	$1,133,001
	Cypress	46,000	$266,626,059	$0	$1,204,376	$3,384,288
	Buena Park	80,100	$464,277,116	$0	$2,097,185	$5,893,075
	Stanton	38,300	$221,995,175	$0	$1,002,774	$2,817,788
	Anaheim	336,300	$1,949,268,341	$0	$8,805,035	$24,742,087
	Garden Grove	169,000	$979,560,957	$0	$4,424,772	$12,433,579
	Santa Ana	348100	$2,017,663,722	$0	$9,113,983	$25,610,231
	Orange	128,000	$741,915,991	$0	$3,351,307	$9,417,149
	Tustin	69,200	$401,098,333	$0	$1,811,800	$5,091,146
	Irvine	191,000	$1,107,077,767	$0	$5,000,778	$14,052,152
	Total OC cities	**1,432,900**	**$8,305,401,743**	**$0**	**$37,516,307**	**$105,420,568**
	Average population OC cities	130,264	$755,036,522	$0	$3,410,573	$9,583,688
	Total Cities (not LA)	**2,643,184**	**$15,320,472,470**	**$0**	**$69,204,063**	**$194,462,947**
	Average population all cities (not LA)	91,144	$528,292,154	$0	$2,386,347	$6,705,619
	City of LA (portion)	**1,000,000**	**$5,796,218,678**	**$0**	**$26,182,083**	**$73,571,476**
	Total Cities	**3,643,184**	**$21,116,691,148**	**$0**	**$95,386,147**	**$268,034,423**
	California	33,871,648				

Savings in Gasoline Consumption

							Annual Emission Savings in tons			Energy Savings
Average Trip Length (miles)	20.83		Power	Miles Saved	Year	CO	NOX	CO2	Gallons of Gasoline
Drivers in 2027	127,590		Requirement	581,752,839	2013	13,380	889	266,443	16,836,398
Average round trip	42			698,103,406	2014	16,056	1,067	319,731	20,203,678
Annual Miles Saved/driver	12,706		312	837,724,088	2015	19,268	1,280	383,678	24,244,414
Passenger Miles per Gallon average	25.68		vehicle trips/day	1,005,268,905	2016	23,121	1,536	460,413	29,093,296
Annual Gallons Saved	63,130,717			1,206,322,686	2017	27,745	1,843	552,496	34,911,956
Average Cost per Gallons	$3.50		12	1,242,512,367	2018	28,578	1,899	569,071	35,959,314
Annual cost saved	$220,957,510		MWH/vehicle trip	1,279,787,738	2019	29,435	1,956	586,143	37,038,094
				1,318,181,370	2020	30,318	2,014	603,727	38,149,237
Maglev Users			3,744	1,357,726,811	2021	31,228	2,075	621,839	39,293,714
Passenger Miles per gallon	100	from TRI	MWH/day	1,398,458,616	2022	32,165	2,137	640,494	40,472,525
Annual Gallons used	16,211,968			1,440,412,374	2023	33,129	2,201	659,709	41,686,701
Average Cost per Gallons	$3.50		1,530,547	1,483,624,745	2024	34,123	2,267	679,500	42,937,302
Annual cost	$56,741,889		MWH/year	1,528,133,488	2025	35,147	2,335	699,885	44,225,421
				1,573,977,492	2026	36,201	2,405	720,882	45,552,183
Net cost savings per year	$164,215,622			1,621,196,817	2027	37,288	2,477	742,508	46,918,749
Net gallons of gas saved per year	46,918,749			1,639,029,982	2028	37,698	2,504	750,676	47,434,855
				1,657,059,312	2029	38,112	2,532	758,933	47,956,639
				1,675,286,964	2030	38,532	2,560	767,281	48,484,162
				1,693,715,121	2031	38,955	2,588	775,722	49,017,487
Annual Reduction in Air Pollution				1,712,345,987	2032	39,384	2,616	784,254	49,556,680
				1,731,181,793	2033	39,817	2,645	792,881	50,101,803
Reduction in auto travel (total miles saved in 2027)	1,621,196,817			1,750,224,793	2034	40,255	2,674	801,603	50,652,923
				1,769,477,265	2035	40,698	2,704	810,421	51,210,105
AQMD RECLAIM Calculation for NOx only				1,788,941,515	2036	41,146	2,734	819,335	51,773,416
Vehicle miles per year**	12500			1,808,619,872	2037	41,598	2,764	828,348	52,342,924
Vehicle Emissions per year**	lbs/12500 mi	lbs	tons	Value***	1,828,514,691	2038	42,056	2,794	837,460	52,918,696
Hydrocarbons	77.1	9,999,542	5,000	$19,999,084	1,848,628,352	2039	42,518	2,825	846,672	53,500,802
Carbon Monoxide	575	74,575,054	37,288	$149,150,107	1,868,963,264	2040	42,986	2,856	855,985	54,089,311
Nitrogen Oxides***	38.2	4,954,377	2,477	$9,908,755	1,889,521,860	2041	43,459	2,887	865,401	54,684,293
Carbon Dioxide***	11450	1,485,016,284	742,508	$100,981,107	1,910,306,600	2042	43,937	2,919	874,920	55,285,820
Total Emissions		1,574,545,257	787,273	$110,889,862	1,931,319,973	2043	44,420	2,951	884,545	55,893,964
Gasoline (gallons/12500 miles)	487				1,952,564,493	2044	44,909	2,984	894,275	56,508,798
					1,974,042,702	2045	45,403	3,016	904,112	57,130,395
CARB Calculation for NOx + HC					1,995,757,172	2046	45,902	3,050	914,057	57,758,829
Vehicle emissions - NOx+HC (tons per mile)*	0.0000042857				2,017,710,501	2047	46,407	3,083	924,111	58,394,176
Total pollution reduction (tons per year)	6,948				2,039,905,316	2048	46,918	3,117	934,277	59,036,512
Value of pollution reduction (per pound on emission credit market)	$2.00				2,062,344,275	2049	47,434	3,151	944,554	59,685,914
Total annual savings	$13,895.97				2,085,030,062	2050	47,956	3,186	954,944	60,342,459
					2,107,965,393	2051	48,483	3,221	965,448	61,006,226
					2,131,153,012	2052	49,017	3,256	976,068	61,677,294
					2,154,595,695	2053	49,556	3,292	986,805	62,355,745
					2,178,296,248	2054	50,101	3,328	997,660	63,041,658
					2,202,257,506	2055	50,652	3,365	1,008,634	63,735,116
					2,226,482,339	2056	51,209	3,402	1,019,729	64,436,202
					2,250,973,645	2057	51,772	3,439	1,030,946	65,145,000
* Source www.arb.ca.gov/html/brochure/history.htm					2,275,734,355	2058	52,342	3,477	1,042,286	65,861,595
280 billion miles per year travel in California					2,300,767,433	2059	52,918	3,516	1,053,751	66,586,073
1.2 million tons of NOx + Hydrocarbons per year in California					2,326,075,874	2060	53,500	3,554	1,065,343	67,318,520
0.0000042857 tons per mile NOx + Hydrocarbons per year in California					2,351,662,709	2061	54,088	3,593	1,077,062	68,059,024
					2,377,530,999	2062	54,683	3,633	1,088,909	68,807,673
** Source www.epa.gov/otaq/consumer/f00013.htm										
Values for emissions are for one year based upon annual average 12,500 miles driven					88,087,170,815	Total	2,026,005	134,597	40,343,924	2,549,314,071
						Value		$538,388,788	$5,486,773,696	
***Sources www.aqmd.gov/reclaim/rtc_main.html						Tons per day	111	7	2,211	139,688
$2 per pound of NOx emission on the Reclaim Trading Credit Market										
Values for other pollutants are illustrative only										
http://europa.eu/rapid/pressReleasesAction.do?reference=MEMO/05/84&format=HTML&aged=1&language=EN&guiLanguage=en										
$0.068 per pound of CO2 emission on the EETNAP (European Emissions Trading and National Allocation Plans) (EU100 per ton)										
****Source The Orange County Register - May 25, 2007										
111.5 tons per day of diesel emissions in California			40,697.5 per year							
5 tons per day of diesel paticulate matter										
34.6 tons per day from heavy duty diesel trucks			12,629 per year							

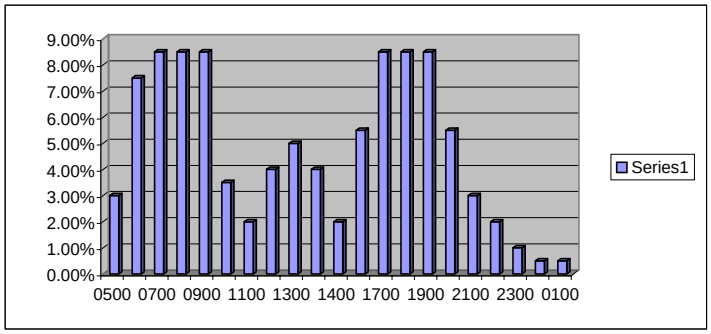
Theoretical Operational Capacity (in year 2062)

seated passengers per vehicle	**1,000**	**1,000**
service frequency (minutes)	**5.0**	**2.0**
vehicle trips per hour (two directions)	24	60
hours per day	**20**	**20**
vehicle trips per day	480	1,200
passenger trips per vehicle trip	1,500	1,500
passenger trips per hour (Capacity)	36,000	90,000
passenger trips per day (Capacity)	720,000	1,800,000
passenger trips per year	219,600,000	549,000,000
average fare per passenger trip	$18.00	$18.00
passenger fares per year	$3,952,800,000	$9,882,000,000

Projected Operational Demand/Usage (in year 2062)

projected daily riders	374,229	374,229	
projected utilization (ridership)	52%	21%	
projected fares per year	$9,426,143,901	$9,426,143,901	
projected fares ratio (demand / capacity)	238%	95%	
maximum passengers on-board/capacity	88%	35%	(assumes equal distribution)

Time of Day	Percent of Daily Riders	In-vehicle	% Capacity
0500	3.00%	11,227	31%
0600	7.50%	28,067	78%
0700	8.50%	31,809	88%
0800	8.50%	31,809	88%
0900	8.50%	31,809	88%
1000	3.50%	13,098	36%
1100	2.00%	7,485	21%
1200	4.00%	14,969	42%
1300	5.00%	18,711	52%
1400	4.00%	14,969	42%
1400	2.00%	7,485	21%
1600	5.50%	20,583	57%
1700	8.50%	31,809	88%
1800	8.50%	31,809	88%
1900	8.50%	31,809	88%
2000	5.50%	20,583	57%
2100	3.00%	11,227	31%
2200	2.00%	7,485	21%
2300	1.00%	3,742	10%
2400	0.50%	1,871	5%
0100	0.50%	1,871	5%
	100.00%	374,229	



Calculations for FTA Benefits Criteria

Summary Description	
Proposed Project:	Orangeline Corridor Development Project Orangeline High Speed Maglev 108 miles, 18 stations
Total Capital Cost ($2007):	$19,228,000,000
Section 5309 Share:	$0
Annual Operating Cost in 2027 ($2007):	$350,097,000
Ridership Forecast (2027):	255,180 daily boardings 255,180 daily new riders
FY 2007 Financial Rating:	**High**
FY 2007 Project Justification Rating:	**High**
FY 2007 Overall Project Rating:	**Highly Recommended**

Mobility Improvements	**New Start vs. No-Build**	**New Start vs. TSM**
Annual Travel Time Savings in 2027(Million Hours)	N/A	36
Total Travel Time Savings Over 50 years (Million Hours)	N/A	1,957

Air Quality Improvements	**New Start vs. No-Build**	**New Start vs. TSM**	**New Start vs. TSM**	**New Start vs. TSM**
Criteria Pollutant		**In 2027**	**Over 50 Years**	**Over 50 Years**
Carbon Monoxide (CO)	N/A	37,288	2,026,005	N/A
Nitrogen Oxide (NO_x)	N/A	2,477	134,597	$538,388,788
Volatile Organic Compounds (VOC)	N/A	N/A	N/A	N/A
Particulate Matter (PM_{10})	N/A	N/A	N/A	N/A
Carbon Dioxide (CO_2)	N/A	742,508	40,343,924	$5,486,773,696
Values reflect annual tons of emissions reductions and dollar values based upon emission credits trading				

Energy Savings	**New Start vs. No-Build**	**New Start vs. TSM**
Gallons of Gasoline (million) In 2027	N/A	47
Gallons of Gasoline (million) Over 50 years	N/A	2,549

Operating Efficiencies	**No-Build**	**TSM**	**New Start**
System Capital + Operating Cost per Passenger Mile (2027)	N/A	$1.14	$0.61
Values reflect 2027 ridership forecast and 2007 dollars.			

Economic Efficiencies	**New Start vs. No-Build**	**New Start vs. TSM**
Incremental Cost per Incremental Passenger	N/A	$0.00
Values reflect 2027 ridership forecast and 2007 dollars. ( ) indicates income.		

Economic Benefits	**New Start vs. No-Build**	**New Start vs. TSM**
Project Surplus	N/A	$23,312,080,297
Operating Reserves	N/A	$2,000,132,327
Station-area Improvements/Feeder Services	N/A	$21,116,691,148
Investor Earnings	N/A	$23,359,337,310
User Cost Savings	N/A	$3,113,357,602
User Delay Savings	N/A	$29,217,442,288
Total Project Benefits	N/A	$91,285,485,109
Project Cost	N/A	$22,693,799,040
Benefit/Cost Ratio	N/A	4.02
Emission Savings	N/A	$6,025,162,484
Benefit/Cost Ratio	N/A	4.29
Values reflect 50-year ridership cost and revenue projections and 2007 dollars.		

Infrastructure Investment Opportunity

50-year Financial Projection

Project Cash Surplus	$23,312,080,297
Operating Reserves	$2,000,132,327
Station-area Improvements and Feeder Services	$21,116,691,148
Investor Interest Earnings	$23,359,337,310
User Cost Savings (Compared to Owning/Driving a Car)	$3,113,357,602
User Travel Delay Savings (Compared to Driving a Car)	$36,301,274,973
Total Project Benefits	$98,369,317,795
Project Cost (including vehicle replacement in year 25)	$22,693,799,040

Orangeline High Speed Maglev Corridor Development Project

A privately-funded transportation system
- Passenger fares and cargo fees would cover all construction and operating costs.

Station-area Development
- Higher-density, transit-oriented development around 18 maglev stations.

Creating a new industry and thousands of jobs
- $19 Billion, 108-mile Orangeline High Speed Maglev from Palmdale to Irvine in Southern California

An alternative to congested freeways
- 70 to 90 mph, every 5 minutes in peak periods, 6-mile station spacing

ORANGELINE HIGH SPEED MAGLEV

The Orangeline Development Authority is a joint powers agency formed to pursue deployment of the Orangeline High Speed Maglev system in Southern California. The Authority is composed of the following public agencies:

City of Artesia
City of Bell
City of Bellflower
City of Cerritos
City of Cudahy
City of Downey
City of Huntington Park
City of Los Alamitos
City of Maywood
City of Palmdale
City of Paramount
*City of Santa Ana
City of Santa Clarita
City of South Gate
City of Vernon

*Membership pending

September 25, 2007

To: Investors and Infrastructure Development Firms

Subject: Orangeline High Speed Maglev Corridor Development Project

The Los Angeles-Orange County region of Southern California once again ranks as the most congested in the nation. Fifteen cities in the two-county area have formed a joint powers authority to pursue a solution – the Orangeline High Speed Maglev Corridor Development Project. The Orangeline Maglev, a high-speed transportation system for passengers and freight, coupled with station-area housing and related improvements, affords excellent public and private investment opportunities. The Project is uniquely positioned to service a tremendous market demand for new transportation, housing and public infrastructure development.

Over $13 million in feasibility studies and organizing efforts have been underway over the past eight years to determine if a high-speed maglev passenger and freight transport network could be built in Southern California, using primarily private funds. Positive results of these studies led to formation of a public private partnership of the Orangeline Development Authority and a private consortium led by ARCADIS.

Information on this project can be obtained at the project website: www.orangeline.calmaglev.org, or by contacting the Authority directly at the address or numbers listed below.

The Authority is seeking expressions of interest from firms and consortia that are interested in participating in the Project as investors and as part of the development team.

Sincerely,

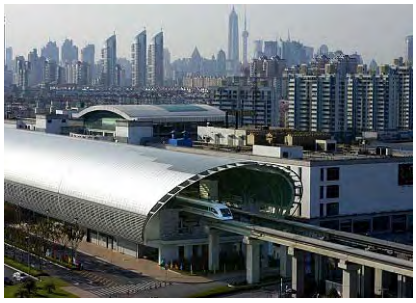
Albert Perdon

Orangeline Development Authority
16401 Paramount Boulevard ▪ Paramount ▪ California 90723 ▪ USA ▪ www.orangeline.calmaglev.org
info@calmaglev.org ▪ Phone 310.871.1113 ▪ Fax 562.924.0152

PROJECT FEATURES

Environment friendly

Passenger comfort



Station-area Development

Proven technology

The Orangeline High Speed Maglev

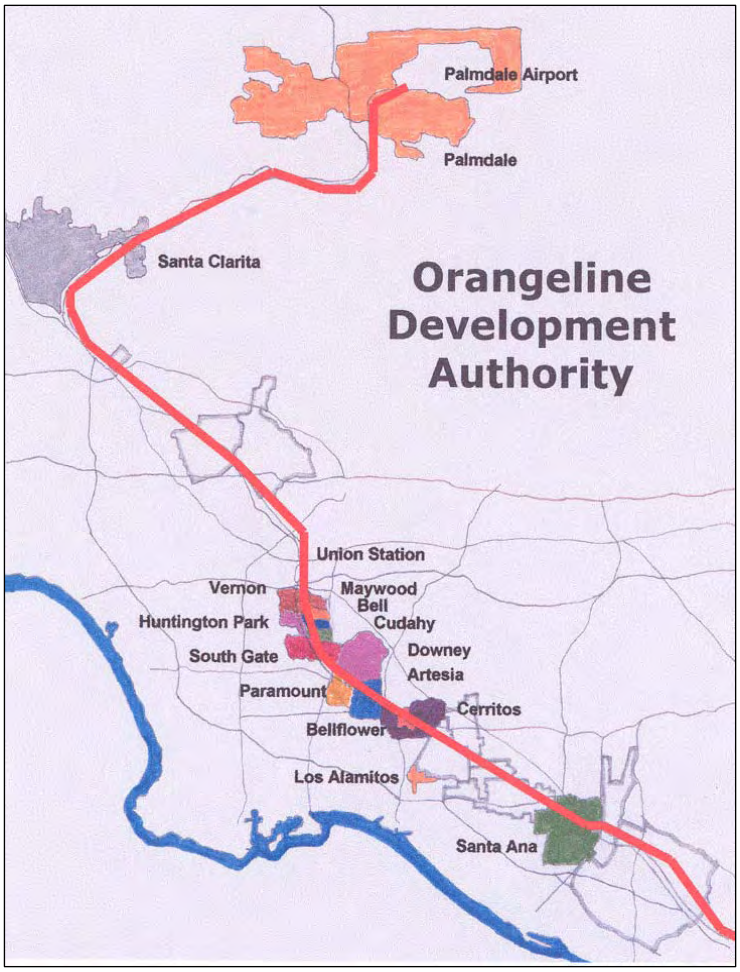
- Serves a two-county area projected to grow from 13 million to 17 million by 2050
- Provides an essential service
- Offers up to 10% return on investment
- Generates a positive cash flow linked to inflation
- Adds capacity to an existing, highly congested transportation corridor
- Creates a new asset that will serve a demonstrated demand at lower cost
- Provides new capacity where there are capacity and government funding constraints
- Enjoys strong local government support with 15 cities that have joined together to take the project from vision to reality

Station-area Development

- Cities are revising land use plans to higher-density, transit-oriented development
- Incentives for transit use are being provided
- Pre-entitlement to facilitate development
- Expedited environmental reviews
- Lower parking requirements, lower costs

JOINT POWERS AUTHORITY

As of September 2007, fifteen cities have joined the Orangeline Development Authority, a joint powers agency with legal authority to implement the Orangeline High Speed Maglev project. Additional cities along the 108-mile corridor are currently considering joining the Authority.



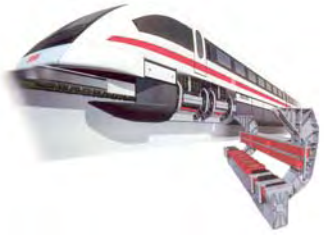
HIGH SPEED MAGLEV IN OPERATION

The first operational maglev system in an urban setting, shown in the left photos, went into revenue service in Shanghai, China on December 29, 2003.

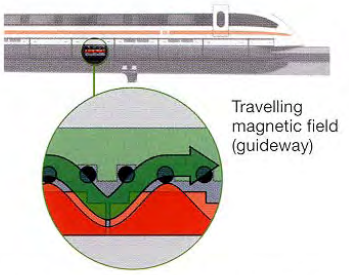
Connecting Shanghai with Pudong Airport at top speeds of over 260 mph, the 30 km system was built in record time. To date, the Shanghai Maglev has carried over 11 million passengers.

Under development for more than 25 years, the Transrapid maglev has been operational at the Emsland, Germany test facility, shown below, since 1984, and has carried over 500,000 passengers.

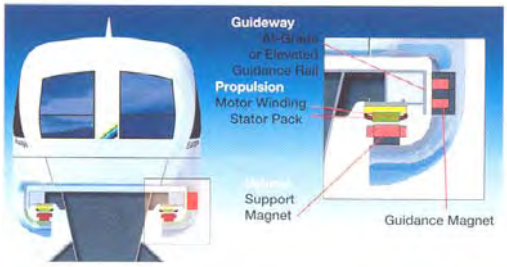
HIGH SPEED MAGLEV TECHNOLOGY



Magnets on-board Maglev vehicles interact with guideway magnets to lift and propel the vehicle along the track

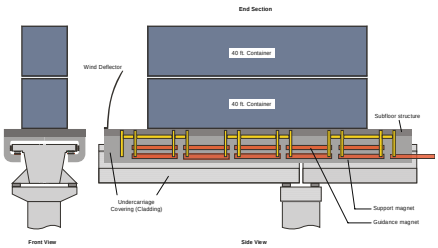


An electric current generates a traveling electromagnetic field in the windings, which pulls the vehicle along by way of its levitation magnets



The maglev vehicle wraps around the elevated monorail guideway, adding an extra measure of safety by precluding derailments.

Maglev can also carry freight on modified standard vehicles, or sea-borne cargo containers on specially designed cargo vehicles.



Transrapid International-USA, Inc.

Orangeline Development Partners

The ARCADIS Team

Corporate Headquarters	Company Name Principle Business	Company Offices
Netherlands	Infrastructure Development	World-wide
Washington, D.C.	Maglev Technology Supplier	United States
Colorado	Infrastructure Construction	United States
Virginia	Program/Construction Management	United States
Los Angeles	Legal Counsel-Public/Private Partnerships	California
Georgia	Engineering	World-wide
Walnut Creek	Land Use Transportation Planning	United States
Germany	Technology and Science	Europe
Los Angeles	Architecture, Planning, Interior Design	California
Illinois	Risk Management - Insurance	World-wide
Germany	Technology	World-wide

Corporate Headquarters	Company Name Principle Business	Company Offices
Maryland	Technology Systems and Science	World-wide
Dallas	Urban Development	United States
Arizona	Engineering	United States
Germany	Infrastructure Development	World-wide
Los Angeles	Transportation Planning	California
San Diego	Real Estate Development	California
Los Angeles	Structural Engineering	California
El Segundo	Real Estate Development Services	World-wide
Los Angeles	Investments, Securities, Financings	United States
Diamond Bar	Public Outreach, Media Relations	California
Germany	Technology	World-wide